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Orthopaedic Perspective during COVID-19 Pandemic in Indonesia: A Literature Review

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Abstract: ***Introduction: On March 11, 2020, the World Health Organization (WHO) declared a global pandemic as the spread of COVID-19 was occurred in a large number of countries in the world. It is known from the Center for Data of the Indonesian Ministry of Health, that the number of COVID-19 is escalating quickly and the exposures have already reached 3, 194, 733 confirmed patients with 560, 275 active cases, 2, 549, 692 patients recovered and 84, 766 patients were declared dead. Therefore, orthopedic divisions are obligated to respond to the new reality, since the safety and survival of every individual are the top priority at this critical moment. Discussion: The Indonesian Orthopedic Association has advised a protocol in line with the increasing escalation of COVID-19 cases. Further classifications are also used in surgical indication for both elective orthopedic surgery and emergency orthopedic surgery. Pre - operative procedure requires all patients should undergo COVID testing by the reverse transcription - PCR test of the nasopharyngeal or oropharyngeal swabs prior to suggestion whenever possible. Intra - operative procedure, operative room setting, post - operative care, inpatient management, and outpatient care based on contact and droplet precautions while ensuring adequate evaluation and care. Conclusion: The COVID-19 pandemic has caused a global health crisis in which each region and country has different facilities and infrastructure capabilities, levels of education, and culture. Indonesia is a country with the highest number of cases with limited resources in the implementation of its health services. Careful monitoring and formulation of flexible disposition will depend on COVID-19 prevalence, workforce availability, and PPE supplies. However, despite it all, the safety and survival of doctors and health care workers, and patients are always be an obligation.***

Keywords: Orthopedic surgery, COVID-19, Surgical Indication, Elective surgery, Emergency surgery, Indonesia

1. Introduction

On March 11, 2020, the World Health Organization (WHO) declared a global pandemic as the spread of COVID-19 was occurred in a large number of countries in the world. (1) On the same month in 2020, The first two cases in Indonesia were identified and the number of cases were increased throughout entire provinces in this country (2) It is known from the Center for Data of the Indonesian Ministry of Health, that the number of COVID-19 exposures reached 3, 194, 733 confirmed patients with 560, 275 active cases, 2, 549, 692 patients recovered and 84, 766 patients were declared dead by 26th July 2021. (3) During the pandemic, national and international governments have given appeals regarding health protocols and also changes from procedural continuity of all aspects of the general population to prevent the spread of the COVID-19 virus, including in the health sector, one of which is the Orthopedic division.

Study by Anoushiravani in May 2020, globally stated that the specialty that prompted the cancellation of many procedures during the pandemic was Orthopedics. (4) During this pandemic, we are obligated to respond to the new reality and safety and survival of every individual takes top priority. The ability to assess emergencies and the functional outcome of delaying a case is very crucial at this critical time.

Safety and protection of doctors and health care workers
The major routes of SARS - CoV - 2 transmission are through respiratory droplets and contact with contaminated surfaces. (5) Although symptomatic patients are the primary source of infection, asymptomatic subjects may also spread the disease and should not be neglected. (6) The protective equipment consists of garments placed to protect the health care workers or any other persons from getting infected through the risk of contact and droplet transmission during their daily work. They usually consist of standard precautions: face protection, goggles and mask or face shield, gloves, gown or coverall, head cover and rubber boots. Health care workers need to be trained for their use, especially with regard to the precautions to be taken during donning and doffing. (7) limited reuse of protective equipment has been recommended; This recommendation has been adopted globally as an option for conserving respirators during previous respiratory pathogen outbreaks and pandemics. Precaution of using double mask is frequently recommended at the present time. (8)

Negative mental health effects frequently occur during a pandemic. (9) They get caught between the call of their duty to care for their patients on the one hand, but they also have the risk of being exposed to infection and transmitting it to their family and closest people. (10)

The Indonesian Orthopedic Association has advised a protocol in line with the increasing escalation of COVID-19 cases (11):

- Increase vigilance in performing services and social interactions
- Constrict the use of standard PPE in providing health services
- Immediately manage a health consultation if there is contact with a confirmed COVID-19 patient and/or followed by symptoms
- Report to the IOA mitigation team to facilitate coordination and assist if special treatment is needed
- Reduce the frequency and volume of services, especially for elective cases and outpatient department
- Obey the COVID-19 protocol, particularly, wearing masks, washing hands, maintaining distance, staying away from crowds, reducing mobility
- Pray everlastingly

Management Principles and Surgical Indication

Principles of management of patients during a pandemic can have differences which can be caused by differences in the timing of the lockdown and the rate of spread of COVID-19 cases.

1) The goal of an orthopedic surgeon is to provide optimal service to patients with orthopedic problems. During a pandemic, in addition, the orthopedic surgeon must ensure the protection of the patient, himself/herself, other health care workers, and other patients. Optimal use of health care resources becomes vital during the pandemic.
2) All patients/visitor staff visiting the hospital should be screened for fever and other suggestive symptoms.
3) COVID-19 patients must be treated separately.
4) Conservative management should be the first line of treatment, except for trauma cases and emergencies cases (red flags). Temporary pain - alleviating measures like intra - articular corticosteroids or nerve blocks should be considered.
5) During the lockdown, all elective procedures are withheld. Surgeries that can be performed with daycare admission could be allowed. A balance must be struck in preventing the spread of COVID-19 and optimal patient care. (12)
6) The suggested risk stratification for surgery during pandemic is as under (13):
   - Elective surgery: A chronic problem where surgery can be delayed without a significant difference in outcome or harm to the patient
   - Urgent, somewhat elective surgery: surgeries for injuries such as ACL, meniscal injuries, rotator cuff tears, biceps injuries, intraarticular displaced radial fractures should still be performed, to minimize the use of resources an outpatient/daycare setting is recommended.
   - Urgent only: As the virus becomes more prevalent, only injuries that require immediate surgery and can prevent impairment of function such as fracture - dislocations, pilon fractures, cauda equina syndrome, etc should be considered.
   - Emergency only: In these circumstances, the hospital and ICU will experience limited resources, and only life or limb - threatening injuries will require surgery. The main goal should be to minimize the use of ventilator support by using spinal anesthesia for surgery.
7) All attempts are intended to reduce the number of hospital visits so that postoperative patient monitoring must also be considered
8) Other than social distancing between doctors and health workers in hospitals, temporal separation is also needed to prevent the spread of infection (12)

Further classifications are used in elective orthopedic surgery and emergency orthopedic surgery. Elective orthopedic surgery consists of one - day surgery and non - emergency inpatient care, where emergency orthopedic surgery consists of immediate, acute, and urgent orthopedic cases. The following classification will be explained in Table1. (14)

Table 1: Orthopedic surgery classification

	Emergency	Acute	Urgent	Non - emergency surgery	One - day surgery
Time to surgery	<24 hrs	24 - 48 hrs	48 hrs - 1 week	>1 week	
Definition	Life threatening/ Limb threatening. Delay in treatment potentially causes disability or mortality	Delay in treatment my cause severe infection, disability or mortality. Estimate significant ongoing blood loss	Delay in treatment potentially causes complications due to bleeding, infection, joint disruption and prolonged immobilization	Delay may not cause significant morbidities/complication	Without hospital admission
Case	Compartment syndrome	Femoral shaft fracture	Every type of closed fracture including spine	Every implant removal surgery	Every surgery requiring local anaesthetic
	Open fracture	Pelvic fracture	Every acute ligament and tendon injury whereas end - to - end repair is planned	Total joint arthroplasty	CTEV cases
	AVN Injury	Multiple long bone fracture	Every pain management cases that requires inpatient care	Curettage and bone graft	
	Dislocation	Open degloving injury	Neglected open fracture	Minimally invasive spine surgery, including interspinous device insertion and cervical disc arthroplasty	
	Acute septic arthritis with SIRS/sepsis	Osteomyelitis with subperiosteal abscess	Musculoskeletal malignancies amputation	Every soft tissue related case, including tendon lengthening and tenotomy	
	Crush injury	Cellulitis with SIRS/sepsis	Osteomyelitis/TB infection debridement	Every arthroscopic procedure and ligament reconstruction	
	Damage control surgeries	Fracture dislocation of spine with cord compression/ spinal cord injury	Musculoskeletal abscess without sepsis	Acromioplasty Bursectomy	
	Suppurative tenosynovitis	Acute joint infection without sepsis		Tumor excision	
	Periprosthetic fracture	Displaced talar neck		Bony and soft tissue	

		fracture		reconstruction	
		Unstable SCFE		Every case requiring general anesthesia that is not included in emergency, acute or urgent group	
		Closed fracture dislocation			

Abbreviation: AVN: avascular necrosis, SIRS: systemic inflammatory response syndrome; SCFE: slipped capital femoral apiphysis, CTEV: congenital talipes equinovarus.

The basic principle to be followed during a pandemic is to limit as much of the hospital stay as possible with the aim of maximizing the availability of beds to deal with upcoming other emergencies while maintaining a high standard of care for the patients. The goal is to treat all the patients in the "golden 72 hours" in order to reduce the overall hospital length of stay. (15)

Preoperativeprocedure
Immediately after patient admission, the COVID-19 risk profile and history of exposure must be carefully assessed. (16) On arrival, the temperature should be checked and each patient should wear a surgical mask. (17)

All patients should undergo COVID testing by the reverse transcription - PCR test of the nasopharyngeal or oropharyngeal swabs prior to suggestion whenever possible. For emergency surgeries, especially limb - saving and life - saving procedures, the surgery can be performed before the test results come out. The results obtained can be delayed and can also give falsely negative results so that they cannot be used as a full handle as a patient's COVID status. (18) While waiting for the results, contact and droplet precautions should be adopted in addition to standard measures. (19)

Intra - operative procedure and operative room setting
Cases of suspected or confirmed COVID-19 must be handled in a special area away from busy areas. (20) Personnel in the operating room should be reduced to a minimum to avoid unnecessary crowds. The operation should be performed at negative pressure to avoid the dissemination of the virus to the outside areas of the operating room. (21)

According to Rodrigues - Pinto et al, there are 5 specific areas in the operating room (22):

1) Entry dressing room. Preparation of essential PPE: a disposable scrub suit, surgical boots or shoes, waterproof shoe covers, a surgical hood, goggles or a face shield, and a respirator.
2) Anteroom. In this place, the patient is being positioned beforehand scrubbing. The recommended position is the prone position to reduce the amount of virus transmission through droplets.
3) OR. The most appropriate and immediate surgical approach should be considered. The use of a suction device should always be available to reduce surgical smoke and aerosols during surgery. Using absorbable sutures may be recommended to reduce additional post - operative visits.
4) Exit rooms. Each surgeon must remove the sterile gown, gloves and perform hand hygiene according to the procedure Nevertheless; there are studies from CiptoMangunkusumo Hospital in 2020, which states that emergency and elective surgeries were not associated with the increasing number of COVID-19 cases. (23, 24)

Post - operative care, inpatient management, and outpatient care
After surgery, suspected or COVID-19 patients should be transferred to an isolation room with contact and droplet precautions, or the ICU if necessary. (19) Several other strategies to reduce contact are that the use of long - lasting wound dressings may be an effective option. (25)

Inpatient management focuses on Social distancing includes cancellation of classes, group outings, and large gatherings, flexible worksites (telecommuting when possible), Replacing in - person conferences with teleconferences, medical screening, and restriction of visitors, and limiting interpersonal contact to greater than six feet. (26)

According to research from Dr. Soeradji Tirtonegoro Central General Hospital and Dr. Saiful Anwar General Hospital (Klaten) in 2020, there is a significant difference in the number of outpatient visits and orthopedic surgeries in the early pandemic period compared to the period before the pandemic occurred. The biggest decline in outpatient visits was in post - operative control patients and spinal problems. (27) During the pandemic, face - to - face visits should be limited to urgent cases and post - operative care that cannot be performed independently. Some of the main indications are wound check, suture removal, evaluation of fracture reduction, highly symptomatic patients suspected of healing - related complications, and follow - up visits that may likely change the management of the case. All patients visiting the clinic must wear a face mask and have their temperature checked. In cases such as flu - like symptoms or exposure to confirmed or suspected cases, patients should be redirected to the emergency department for further examination. (28) In some developed countries, cases that do not require urgent face - to - face visits can generally be consulted via telemedicine to minimize the spread of COVID-19 while ensuring continuous care. (29) Telemedicine can facilitate the diffusion of educational media, deliver outcome evaluation questionnaires and enhance patient rehabilitation. (30)

2. Conclusion

The COVID-19 pandemic has caused a global health crisis in which each region and country has different facilities and infrastructure capabilities, levels of education, and culture. Indonesia is a country with the highest number of cases with limited resources in the implementation of its health services, therefore surgical indications, operative room

settings, inpatient management, post - operative care should be continuously reassessed based on local, regional, and national situations following both facility requirements and regulations from the authorities.

Furthermore, pandemic dynamics are continuously evolving so that careful monitoring and formulation of flexible disposition will depend on COVID-19 prevalence, workforce availability, and PPE supplies. However, despite it all, the safety of doctors and health care workers, and patients are always a top priority.

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